



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,067	10/21/2003	Thomas M. Young	VAPR.05107	9329

7590
Sharon R. Kantor
The Firenza Group Ltd.
65 Panorama Court
Danville, CA 94506-6154

EXAMINER

BERTHEAUD, PETER JOHN

ART UNIT	PAPER NUMBER
----------	--------------

3746

MAIL DATE	DELIVERY MODE
-----------	---------------

06/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/691,067	Applicant(s) YOUNG ET AL.	
	Examiner Peter J. Bertheaud	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-13,15,19,21-25 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,14,16-18,20 and 26-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-13,15,19,21-25 and 29-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/19/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendments of 2/20/2007. It is noted that claims 1, 4, 5-13, 15, 19, 21-25, and 29 have been amended, claims 2, 3, 14, 16-18, 20, 26-28 have been cancelled, and claims 30, 31, and 32 are new. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show the detailed limitations of amended claim 9. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 9, 10, and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In reference to claim 9, the "support" for the amended part of the claim was found to be scattered, inconsistent, and insufficient making the limitations hard to interpret and giving them little patentable weight. Furthermore, the various "modified components" are not shown in the drawings, which is even more evidence that this claim is not properly supported or described in such a way as to convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 9, 10, and 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 9, it is stated that the liquid treatment

Art Unit: 3746

component comprises various "modified" components that are already present in claim 1, from which claim 9 depends. Therefore, the indefiniteness of this claim poses questions: Does this mean that there are two or each of these components? Are the modified components within the liquid treatment component?

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1, 4, 9-12, 15, and 29-32 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 5, 20, 10, 11, 16-18, 25, 26, and 28 of U.S. Patent No. 6,634,864. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

In claims 1, 30, and 31 of the amendment, the repeatedly used term "component" is broader than the term "layer" which is used in the same context in claims 1 and 16 of the patent. In claims 1, 30, and 31 of the amendment a "capillary device" is referred to in the preamble, and there is a limitation referring to the vaporizer component structure as "an interconnected network of associated structural elements selected from among: aligned cylinders; columns; reticulated spaces; struts; as well as combinations of any of the foregoing". Examiner maintains that because the amended claim describes a "capillary device" with an "interconnected network" it is obvious that a "layer having capillary-sized pores" mentioned in claim 1 and 16 of the patent could have structural elements selected from among: aligned cylinders; columns; reticulated spaces; struts. In claim 4 of the amendment "vapor collection channels formed by fins, posts, curved spirals as well as any combinations of the foregoing" can be interchanged with, and interpreted to have the same meaning as the "porous and channeled heat transfer portion" described in claims 1 and 16 of the patent, and further described in claims 2 and 17 as having "multiple posts protruding", due to the fact that it is obvious that this "porous and channeled portion" could have contained fins, posts, or curved spirals. In claims 9 and 12 of the amendment, the phrase "liquid treatment component" can be interchanged with, and performs the same function as, the "porous preheat layer" as mentioned in claim 16 and further described in claim 25 of the patent because they both affect the liquid prior to vaporization.

9. Claims 5-8 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 16 of U.S. Patent No. 6,634,864.

Art Unit: 3746

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

U.S. Patent No. 6,634,864 discloses the claimed invention, as explained above, except for the vaporization component, the heat transfer component, and insulation component being in an annular arrangement, wherein the fluid flow is from a center area of the device to an outer periphery of the device or from an outer periphery of the device to a center area of the device. It would have been obvious to one having ordinary skill in the art at the time the invention arrange the components annularly, since such a modification would amount to a mere change in shape. It has been held that a change in form or shape is generally recognized as being within the level of ordinary skill in the art, absent any showing of unexpected results. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (see MPEP 2144.04 IV. B - Changes in Shape).

10. Claim 13 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 16 of U.S. Patent No. 6,634,864 in view of Wilkinson 4,325,345.

U.S. Patent No. 6,634,864 discloses all the limitations substantially as claimed except for an internal combustion engine or microturbine arranged to receive vapor output.

Wilkinson teaches a gasoline fuel vaporization system 10 for internal combustion engines including a vaporization chamber 12, a housing 14, and a fuel line 17.

Wilkinson further teaches an internal combustion engine arranged to receive vapor

output from the vaporization chamber (see claim 1, lines 1-7) and that this would be advantageous because exposure of the fuel in the fuel air mixture is increased.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the capillary pump of U.S. Patent No. 6,634,864 by arranging an internal combustion engine to receive vapor output, as taught by Wilkinson, in order to increase the exposure of the fuel in the fuel air mixture so as to allow for complete combustion and utilization of fuel (see col. 1, lines 51-58).

11. Claims 19 and 21-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 16, 13-15, 20 and 29-31 of U.S. Patent No. 6,634,864. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

In claim 21 of the amendment the "controller...for permitting control" of various input and outputs can be interchanged with, and interpreted to have the same meaning as "a thermal-to-electric energy converter" as mentioned in claims 13-15 and 29-31 of the patent because they both control the input, and therefore, the output of the device. In claim 23 of the amendment the "common supply source" can be accounted for by claim 1 of the patent, in which it is stated, "a vaporization layer to form vapor from liquid", meaning there must be a liquid supply source connected to the device.

U.S. Patent No. 6,634,864 discloses the claimed invention, as explained above, except for a plurality of the devices of claim 1 (which includes a heater) arranged in an array. It would have been obvious to one having ordinary skill in the art at the time the invention to combine two or more of the devices from claim 1 to form an array in order

Art Unit: 3746

to create a larger amount of vapor, since such a modification would amount to a mere duplication of parts. It has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (see MPEP 2144.04 VI. B – Duplication of Parts).

In reference to claim 23 of the amendment, U.S. Patent No. 6,634,864 discloses the claimed invention except for a separate supply source provided to feed liquid into each device. It would have been obvious to one having ordinary skill in the art at the time the invention to have separate supply sources in order to allow for a greater amount of liquid to draw from, since such a modification would amount to a mere duplication of parts. It has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960) (see MPEP 2144.04 VI. B – Duplication of Parts).

Furthermore, in reference to claims 21 and 24 of the amendment, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (*Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Art Unit: 3746

12. Claim 25 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 5, 16, 13-15, 20 and 29-31 of U.S. Patent No. 6,634,864 in view of Schladitz 3,869,242.

U.S. Patent No. 6,634,864 discloses the invention, as explained above, as claimed except for a common vapor chamber for collecting vapor output from each device; and at least one orifice in the common vapor chamber for the release of vapor from the array

Schladitz teaches a process for vaporizing fuel oil including, a porous body 1 formed as an electrical resistance heating element, a housing 10, and a mixing chamber 13. Schladitz further teaches a vapor chamber 11 to receive vapor output from the porous body and at least one orifice 12a in the vapor chamber for the release of vapor. Schladitz teaches that this would be advantageous because the vapor can be directed into a mixing chamber, to which combustion air is supplied, and then moved to a heating boiler for combustion.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify the capillary pump of U.S. Patent No. 6,634,864 by adding a vapor chamber to receive vapor released from a device and one or more orifices in the vapor chamber providing vapor release, as taught by Schladitz, in order to allow for the direction of vapor into a mixing chamber, so it can be mixed with air, and moved to a combustion chamber (see col. 2, lines 51-62).

Response to Arguments

13. Applicant's arguments filed 2/20/2007 have been fully considered but they are not persuasive.

14. In response to applicant's argument that Wilkinson or Schladitz do not disclose a capillary device, or more specifically, a fluid introduced by capillary forces; The limitation of a "capillary device" comprising a "network..." has been provided in the US Patent 6,634,864 as explained above, making Wilkinson and Schladitz only responsible for providing the respective limitations of claims 13 and 25, which simply concerns the vapor output of their devices and how said vapor is received.


Conclusion

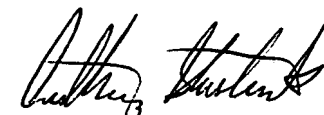
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Bertheaud whose telephone number is (571) 272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


PJB
5/30/07


ANTHONY D. STASHICK
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700